

## CLAIMS

What is claimed is:

- 1 1. A method of defining and deploying a networked computer system, comprising the  
2 steps of:  
3 creating and storing a textual representation of a logical configuration of the  
4 networked computer system according to a structured markup language;  
5 based on the textual representation, generating one or more commands for one or  
6 more switch devices that are interconnected to one or more computing  
7 elements and storage devices, wherein the commands instruct the switch  
8 devices to logically connect the computing elements and storage devices into  
9 an operable computer system that conforms to the logical configuration.
- 1 2. A method as recited in Claim 1, wherein creating and storing a textual representation  
2 comprises the steps of creating and storing a textual representation of a logical  
3 configuration of the networked computer system according to a structured markup  
4 language, wherein the textual representation includes at least one element defining  
5 an automatically created monitor process for monitoring one or more parameters of  
6 one or more of the computing elements.
- 1 3. A method as recited in Claim 1, wherein creating and storing a textual representation  
2 comprises the steps of creating and storing a textual representation of a logical  
3 configuration of the networked computer system according to a structured markup  
4 language, wherein the textual representation includes at least one element defining a  
5 load balancing function for one or more of the computing elements.
- 1 4. A method as recited in Claim 1, wherein the textual representation comprises:  
2 at least one server role definition comprising at least a role name value and a  
3 hardware type value; and  
4 one or more definitions of servers of the networked computer system, wherein each  
5 definition of a server uses and references the server role definition.
- 1 5. A method as recited in Claim 1, wherein the textual representation comprises:  
2 at least one server role definition comprising at least a role name value and a  
3 hardware type value; and

4 a plurality of definitions of servers in a server tier of the networked computer  
5 system, wherein each definition of a server uses and references the server role  
6 definition.

1 6. A method as recited in Claim 1, wherein the textual representation comprises:  
2 at least one definition of a load balancing function;  
3 at least one server tier definition that defines a plurality of servers that receive  
4 inbound traffic from the load balancing function; and  
5 at least one fixed server definition that defines a fixed server that is associated with a  
6 server role definition.

1 7. A method as recited in Claim 6, wherein the definition of the load balancing function  
2 comprises an indication that inbound traffic directed to the load balancing function  
3 arrives from an outer virtual local area network.

1 8. A method as recited in Claim 6, further comprising the steps of:  
2 receiving server selection information representing addition of a new server to the  
3 logical configuration of the networked computer system;  
4 in response thereto, automatically generating and sending to a load balancer that  
5 carries out the load balancing function, configuration information that  
6 identifies the new server and that instructs the load balancer to begin carrying  
7 out load balancing for the new server.

1 9. A method as recited in Claim 8, wherein the configuration information comprises an  
2 IP address of a subnet that contains the new server.

1 10. A method as recited in Claim 1, wherein the textual representation comprises:  
2 at least one server tier definition that defines a plurality of servers that receive  
3 inbound traffic from a load balancing function; and  
4 at least one definition of the load balancing function, comprising an output interface  
5 value, an input interface value, a virtual address value, a load balancing  
6 policy value, and a tier value that identifies the server tier to which traffic is  
7 directed using the load balancing function.

1 11. A method as recited in Claim 6, further comprising the steps of:

2 receiving server selection information representing addition of a new server to the  
3 logical configuration of the networked computer system;  
4 in response thereto, automatically generating and sending to a DNS server and a  
5 DHCP server of a subnet that contains the new server, address information  
6 that identifies the new server and that instructs the DNS server and DHCP  
7 server to begin providing services to the new server.

1 12. A method as recited in Claim 1, wherein the textual representation comprises at least  
2 one server tier definition that defines a plurality of servers that receive inbound  
3 traffic from the load balancing function; and wherein each server tier definition  
4 comprises one or more input interface values, a role value, and information  
5 specifying a maximum number of physical servers and a minimum number of  
6 physical servers for use in a server tier represented by the server tier definition.

1 13. A method as recited in Claim 1, wherein the textual representation comprises at least  
2 one fixed server definition that defines a statically addressed server of the networked  
3 computer system; and wherein each server definition comprises one or more input  
4 interface values that identify a virtual local area network, a role value that identifies  
5 a processing role carried out by the server, and information specifying a network  
6 address of the server.

1 14. A method as recited in Claim 1, further comprising the steps of:  
2 associating a first server definition of the textual representation with at least one  
3 external entity declaration that represents a network address of a server that is  
4 represented by the first server definition;  
5 creating and storing, in the textual representation, a copied server definition based on  
6 duplicating the first server definition;  
7 resolving each external entity declaration of the server definition of the textual  
8 representation and the copied server definition of the textual representation  
9 into a different actual network address;  
10 based on the textual representation, generating one or more commands for one or  
11 more switch devices that are interconnected to one or more computing  
12 elements and storage devices, wherein the commands instruct the switch  
13 devices to logically connect the computing elements and storage devices into  
14 an operable computer system that conforms to the logical configuration.

- 1 15. A method as recited in Claim 1, further comprising the steps of:  
2 receiving a first server definition that omits a network address of a server that is  
3 represented by the first server definition;  
4 creating and storing, in the textual representation, a copied server definition based on  
5 duplicating the first server definition that is associated with the graphical  
6 icon;  
7 determining a dynamic network address value for use with the server that is  
8 represented by the first server definition;  
9 based on the textual representation, generating one or more commands for one or  
10 more switch devices that are interconnected to one or more computing  
11 elements and storage devices, wherein the commands instruct the switch  
12 devices to logically connect the computing elements and storage devices into  
13 an operable computer system that conforms to the logical configuration.
- 1 16. A method as recited in Claim 1, wherein the textual representation comprises at least  
2 one firewall definition that comprises a firewall name value, a plurality of interface  
3 values that define logical connections to a firewall device associated with the  
4 firewall definition, and one or more definitions of services that the firewall is  
5 allowed to permit or deny.
- 1 17. A method as recited in Claim 1, wherein the textual representation comprises:  
2 at least one server role definition comprising at least a role name value and a  
3 hardware type value;  
4 a disk attribute definition that defines additional local disk storage for the server  
5 defined in the server role definition, comprising a drive name value and a  
6 drive size value; and  
7 one or more definitions of servers of the networked computer system, wherein each  
8 definition of a server uses and references the server role definition.
- 1 18. A method as recited in Claim 15, wherein the step of generating one or more  
2 commands comprises the steps of:  
3 generating one or more commands that allocate disk space according to the drive  
4 size value in a storage device that is accessible using a storage area network  
5 interface;

6 mapping the allocated disk space to a server of the networked computer system that  
7 implements one of the definitions of servers.

1 19. A method as recited in Claim 15, wherein the step of generating one or more  
2 commands comprises the steps of:  
3 providing in the textual representation, one or more disk tags that specify one or  
4 more changes in storage volume for the logical configuration;  
5 generating one or more commands that create one or more logical volumes of disk  
6 space according to the drive size value in a storage device that is accessible  
7 using a storage area network interface;  
8 mapping the allocated disk space to a server of the networked computer system that  
9 implements one of the definitions of servers.

1 20. A method as recited in Claim 1, wherein the textual representation comprises an  
2 action definition that defines actions for execution for each server in a tier of one or  
3 more servers when an additional server is added to the tier.

1 21. A method as recited in Claim 20, wherein the action definition comprises one or  
2 more tier name values, wherein each tier name value identifies the tier and has an  
3 associated script name value that identifies a script of actions for execution with  
4 respect to each server in the tier identified by the name value.

1 22. A method as recited in Claim 21, further comprising the steps of:  
2 receiving information indicating that a new server has been added to the tier;  
3 executing the script of actions with respect to each server in the tier.

1 23. A method as recited in Claim 1, wherein the textual representation comprises one or  
2 more definitions of repeatable actions, wherein each definition of a repeatable action  
3 defines one or more actions for execution with respect to each server in a tier of one  
4 or more servers when an additional server is added to the tier.

1 24. A method as recited in Claim 20, wherein the action definition comprises a tier name  
2 value that identifies the tier, and a script name value that identifies a script of actions  
3 for execution with respect to each server in the tier identified by the name value, and  
4 further comprising the steps of receiving a network address of a new server that is

5 newly added to the tier and invoking the script on the new server based on the  
6 network address of the new server.

1 25. A method as recited in Claim 20, wherein the textual representation comprises a  
2 second action definition that defines second actions for execution for each server in a  
3 tier of one or more servers when one of the servers is removed from the tier.

1 26. A method as recited in Claim 25, wherein the action definition comprises a tier name  
2 value that identifies the tier, and a script name value that identifies a script of actions  
3 for execution with respect to each server in the tier identified by the name value.

1 27. A method as recited in Claim 25, further comprising the steps of:  
2 receiving information indicating that one of the servers has been deleted from the  
3 tier;  
4 executing the script of actions with respect to each server in the tier.

1 28. A method as recited in Claim 1, wherein the textual representation comprises an  
2 action definition that defines actions for execution for each server in a first tier of  
3 one or more servers when an additional server is added to a second tier of one or  
4 more servers.

1 29. A method as recited in Claim 28, wherein the action definition comprises one or  
2 more tier name values, wherein each tier name value identifies the first tier and has  
3 an associated script name value that identifies a script of actions for execution with  
4 respect to each server in the first tier.

1 30. A method as recited in Claim 29, further comprising the steps of:  
2 receiving information indicating that a new server has been added to the second tier;  
3 executing the script of actions with respect to each server in the first tier.

1 31. A method as recited in Claim 1, wherein the textual representation comprises one or  
2 more definitions of repeatable actions, wherein each definition of a repeatable action  
3 defines one or more actions for execution with respect to each server in a first tier of  
4 one or more servers when an additional server is added to a second tier of one or  
5 more servers.

1 32. A method as recited in Claim 31, wherein the action definition comprises a tier name  
2 value that identifies the first tier, and a script name value that identifies a script of  
3 actions for execution with respect to each server in the first tier, and further  
4 comprising the steps of receiving a network address of a new server that is newly  
5 added to the second tier and invoking the script on the new server based on the  
6 network address of the new server.

1 33. A method as recited in Claim 1, wherein the textual representation comprises an  
2 action definition that defines actions for execution for each server in a first tier of  
3 one or more servers when one of the servers is removed from a second tier of one or  
4 more servers.

1 34. A method as recited in Claim 33, wherein the action definition comprises a tier name  
2 value that identifies the first tier, and a script name value that identifies a script of  
3 actions for execution with respect to each server in the first tier.

1 35. A method as recited in Claim 34, further comprising the steps of:  
2 receiving information indicating that one of the servers has been deleted from the  
3 first tier;  
4 executing the script of actions with respect to each server in the second tier.

1 36. A method as recited in Claim 1, further comprising the steps of:  
2 receiving a storage definition in the textual representation that specifies a requested  
3 quantity of storage for association with the computer system that is defined in  
4 the textual representation;  
5 based on a stored table that maps logical units of storage available for use in the  
6 computer system, requesting and obtaining an assignment of the storage to  
7 the computer system;  
8 automatically creating and storing a mapping that correlates the assigned storage to a  
9 processing unit of the computer system.

1 37. A method as recited in Claim 1, further comprising the steps of:  
2 receiving a storage definition in the textual representation that specifies a requested  
3 quantity of storage for association with the computer system that is defined in  
4 the textual representation;

5 based on a stored table that maps logical units of storage available for use in the  
6 computer system, requesting and obtaining an assignment of the storage to  
7 the computer system;  
8 providing to a gateway that interfaces the assigned storage to a processing unit of the  
9 computer system, a mapping of the assigned storage to a port of the gateway.

1 38. A computer-readable medium carrying one or more sequences of instructions for  
2 defining and deploying a networked computer system, wherein execution of the one  
3 or more sequences of instructions by one or more processors causes the one or more  
4 processors to perform the steps of:  
5 creating and storing a textual representation of a logical configuration of the  
6 networked computer system according to a structured markup language;  
7 based on the textual representation, generating one or more commands for one or  
8 more switch devices that are interconnected to one or more computing  
9 elements and storage devices, wherein the commands instruct the switch  
10 devices to logically connect the computing elements and storage devices into  
11 an operable computer system that conforms to the logical configuration.

1 39. An apparatus for defining and deploying a networked computer system, comprising:  
2 means for creating and storing a textual representation of a logical configuration of  
3 the networked computer system according to a structured markup language;  
4 means for based on the textual representation, generating one or more commands for  
5 one or more switch devices that are interconnected to one or more computing  
6 elements and storage devices, wherein the commands instruct the switch  
7 devices to logically connect the computing elements and storage devices into  
8 an operable computer system that conforms to the logical configuration.

1 40. An apparatus for defining and deploying a networked computer system, comprising:  
2 a processor;  
3 a computer-readable medium accessible to the processor and storing a textual  
4 representation of a logical configuration of the networked computer system  
5 according to a structured markup language;  
6 one or more sequences of instructions stored in the computer-readable medium and  
7 which, when executed by the processor, cause the processor to generate one  
8 or more commands for one or more switch devices that are interconnected to  
9 one or more computing elements and storage devices, based on the textual



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representation, wherein the commands instruct the switch devices to logically connect the computing elements and storage devices into an operable computer system that conforms to the logical configuration.

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